China Water Model

Poster Abstract

The China Water Model generates projections of China's available water resources and expected water use for the 10 major river drainage regions representing 100% of China's mean annual runoff and comprising 37 major river basins. The model estimates water surpluses and/or deficits in the three end-use sectors, urban, industrial, and agricultural, for the period 1980 to 2025. The results of the modeling indicate that, based on 100 runs of the model, water deficits never or almost never occur during the study period in eight of the ten regions. However in the Haihe and Huanghe regions, located in northeastern China, significant and/or ongoing deficits in the agricultural sector are experienced throughout the study period. In these regions, water use requirements exceed the sustainable yield and it is assumed that deficits are met by mining groundwater. This assumption is confirmed by reports that groundwater mining is already under way in the most intensively cultivated and populated areas of northeastern China, particularly around the Beijing area. The China Water Model is a dynamic simulation model that was developed as a part of a critical infrastructure analysis of the People's Republic of China that was performed to address questions about China's ability to meet its long-term grain requirements and energy needs. This goal was achieved by linking the water model with models that simulated agriculture, energy, and greenhouse gas. These four models were developed to simulate, respectively, the hydrologic budgetary processes, grain production and consumption, energy demand, and greenhouse gas emissions in China for the period of study. The data from the water model was used by the agricultural model to estimate the production of the three major grains (corn, wheat, and rice), and for the demand for land required to meet these projections in each region. The China Water Model and the co-models were developed on a PC platform using Powersim Constructor and can be run on any Pentium PC or equivalent using software that can be downloaded from the Internet.